

Turkish Adaptation of Caring Climate Scale in a Physical Activity Setting and Reviewing Psychometry Properties: Validation and Reliability Study

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Abstract

The research objective in this study is to make adaptation of Caring Climate Scale in a physical activity setting (CCS) that is developed by Newton et al. (in 2007) to Turkish and examine its psychometric properties. The scale comprises of one-dimension and 13 items. 468 students who have been studying and doing physical exercise as certified athletes in the following Schools of Physical Education and Sports of Ahi Evran University, Marmara University, Akdeniz University, Selcuk University and Ege University constitute the research group of the study. Internal consistency, factor analysis of substance, test-retest and criterion-related validity studies applied for determining the psychometric properties of scale. The Cronbach's alpha internal consistency coefficient value of the scale was determined as 0.801 for total point. The obtained data from the exploratory and confirmatory factor analysis has corroborative features for the single-factor structure of scale. Besides, the scale provided high-test–test-retest scores in analyses conducted. In this context, it is evaluated that the scale is a valid and reliable measuring instrument for Turkish sample group.

Keywords: caringclimate, student athletes, caring climate in sports

1. Introduction

Although there have already been articles in relation to caring concept since 40 years, it is still evaluated as hard to define because of the uncertainties about the concept (Cutcliffe, 2005; Newton et al., 2007; McCance et al., 1997; Rolfe, 2009). The Caring concept is defined as: a moral imperative, affectivity, a human characteristic, an interpersonal mutual effect and a therapeutic intervention (Berman et al., 2008; Morse et al., 1990). Roach (1984) focused on rendering care (caring) according to a philosophic perspective. Caring is not a simple emotional or attitudinal reaction. Caring has always been entirely evaluated as type of action and path of inhesion. Roach (1984) defines the professional care rendering (caring) as human behavior including administrative, emotional and cognitive skills in it.

The researches have examined the role of trainers and youth in providing fair contribution for a long time (Smith & Smoll, 2002; Horn, 2008; Mageau & Vallerand, 2003). The majority of the studies report that the trainers, who supply positive impression for sportsman, give proper feedback and contribute to their sovereignty by supporting them, are sources of inspiration for favorable performance and effective struggle. Besides, the researchers note that there is a perceptibly reduction in the athletes' leaving sport who have been in this pleased atmosphere (Fry & Newton, 2003; Sarrizin, Vallerand, Guillet, Pelletier, & Cury, 2002; Gumus & Isik, 2018). In addition to this, trainers contribute not only to developing athletic skills of sportsman but also contribute to self-help and life skills of them while they enable them to join the community as constructive and merciful individuals (Gould, Flett, & Lauer, 2012).

As well as the trainers have many methods of influencing the empathy and other aspects of positive youth development, the one which will provide an important point of view among them is constituting the care environment. Many researchers evaluate the care environment as a crucial component of physical activity

programs for positive development of adults (Petitpas, Cornelius, Van Raalte, & Jones, 2005; Hellison et al., 2000).

The conducted researches have showed that the effects of caring climate on empathy through the physical activity environment. In a research executed on sportsman, it is observed that the environment in which a caring climate has been created increases the emphatic tendency (Newton et al., 2007). Gano-Overway (2013) also reports that the sportsman adopts more positive manners and more compassionate feelings in the sight of merciful attitudes in an environment in which a caring climate has been created. These researches give an idea to us that there is an empirical connection between the caring climate, empathy and helpful attitudes. Moreover, the author states that caring climate reduces the antisocial behaviors of youth and contributes to exhibition of positive social attitudes (Gano-Overway et al., 2009). Besides, the caring climate helps adolescents follow, administrate and control their positive and negative feelings while it also increases their affection against other people. The skills of one have to lighten his/her feelings, feel empathy, share, relief and support others are seemed to be a consequence of a caring climate which represents a mature and physiologically adopted approach (Noddings, 2006; Seligman, 2006).

The Caring Climate Scale was developed by Newton et al. (2007) to measure the perception proportion of caring concept by youth in terms of social and interpersonal approach. The scale focuses on to what extent the care environment of sportsman provided by their trainers is felt.

For revealing all aspects of caring climate, several scale development studies have already been executed in the field of education. Bulach, Brown and Potter (1998) have tried to determine the caring climate that is in the field of education environment across their study. However, we can state that the literature within the context of sport and in relation to caring climate is extremely limited. Although there have been a few studies concentrated on service industry, the literature related to these studies have obviously focused on the health sector. There is very limited research about developing and supporting the physical activity environment in the context of caring climate.

For the sake of providing the fair contribution consistently and acquiring sustainable achievements, the concept of caring climate is evaluated as having potential to be an important component in the field of sport. Especially, the subject of developing healthily emotional relationships in terms of sportsman and trainer in the physical activity environment takes a stand against us to be considered as a crucial point. From this point forth, the purpose of this study is to make the adaptation of the caring climate scale into Turkish and examine its psychometric properties for determining the sportsman's caring climate and enabling the concept to be examined by various sports fields.

2. Method

2.1 Participants

468 student athletes who have been studying and doing physical exercise as certified athletes in the following Schools of Physical Education and Sports of Ahi Evran University, Marmara University, Akdeniz University, Selcuk University and Ege University constitute the research group of this study. 51.9% (243) of participants are male, 48.1% (225) of participants are female. 22.9% (107) of the athlete students attended to study are 1st grade, 24.1% (113) of them are 2nd grade, 34.4% (161) of them are 3rd grade and 18.6% (87) of them are 4th grade.

2.2 Data Collection Tools

The Personal Information Form, Caring Climate Scale and Athletic Identity Measurement Scale have been performed to the research group.

2.3 Instruments

2.3.1 Caring Climate Scale in a Physical Activity Setting

The scale developed by Newton et al. (2007) consists of 13 items and one-dimension. It is kind of a 5-point Likert scale in which I strongly disagree (1) and I strongly agree (5). Participants mark their agreement levels for each statement of the scale from I strongly disagree (1) to I strongly agree (5) on the variable five-point Likert scale. The Cronbach's alpha internal consistency coefficient value of the scale was determined as 0.801 for total point.

2.3.2 Athletic Identity Measurement Scale

The Athletic Identity Measurement Scale (AIMS) which was developed by Brewer et al. (1991) consists of 10 items in total and is kind of a 7-point Likert scale in which I strongly disagree (1) and I strongly agree (7). This scale has one-dimension helps to determine the athletic identity (e.g., I evaluate myself as an athletic). The

Turkish version adaptation of the scale was made by Cetinkaya (2010). The Cronbach's alpha internal consistency coefficient value of the scale was determined as 0.846 for total point. The Cronbach's alpha internal consistency coefficient value of this study was determined as 0.826.

2.4 Data Collection and Translation Works

The Translation and Back Translation procedures were performed during the translation period of Caring Climate Scale (CCS) into Turkish. At first, the scale was translated into Turkish by four researchers from the fields of English Language Teaching and Physical Training and Sports. The measures of the complete translations were compared and common measures were specified. Later, Turkish version of the scale was translated into English again by two specialists in the field of English Language Teaching. Then, the latest translated version and the original version of the scale were compared and the measures with the highest representative appearance were picked. Finally, the scale that was put the last touches on performed on the athlete-students during the 2017/2018 education year.

2.5 Analysis of Data

Missing value examination was performed at the first stage of analysis process. It was seen in the data matrix that 29 participants didn't answer more than 10% of the measures in the scale and the data belong to these participants were extracted from data set. Besides, since 12 participants have marked the same point for all measures, their remarks were also extracted from the data set. Following this, the rate of missing value was reviewed in the data matrix's measure distributions. After the rate of missing value was determined below than 5%, the assignments to missing values were made by benefiting from the regression assignment procedure. In addition, minimizing of statistical error ratio was targeted by examining the extremal values and normality distributions. The SPSS 20 was used for descriptive analysis of data and exploratory factor analysis and Lisrel 8.7 computer program was used for confirmatory factor analysis. Before performing factor analysis, the main components were examined in terms of suitability to factor analysis (Fayers, Hays & Hays, 2005) by using Kaiser-Meyer-Olkin (KMO) and Barlett Tests. The KMO value was determined as 0.803 and the conclusion of Barlett test as [$\chi^2=1444,225$, $df=78$, $p<.000$] according to the results of Kaiser-Meyer-Olkin (KMO) Sampling Competency Analysis performed for detecting the suitability to factor analysis.

3. Construct Validity

3.1 Exploratory Factor Analysis

Factor analysis was used for providing the construct validity of the measuring instruments that were applied during the research. The aims of the factor analysis are given below (Tabachnick & Fidell, 2007; Thompson, 2004):

- To group the numerous variables observed under less dimension,
- To define by using the variables observed,
- To determine the sub-dimensions of the developed scale and the relationship between measures and sub-dimensions,
- To confirm the suitability of scale's dimensions for different cultures and groups through the version adaptation studies.

Factor analysis is divided into two sections as Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The main purpose in EFA is to reduce the observed variables number in order to determine the sub-dimensions of the scale. Also in this study, we began with EFA to set forth the construct validity of the scale.

As the first step of providing the construct validity, the data related to Caring Climate Scale was examined with Exploratory Factor Analysis via SPSS 20.00 computer program. While performing EFA, it was restricted with the one-dimension structure of the scale. In order to be a good representative/indicator of the dimension that is represented by a substance, the factor load should be 0.30 and above (Buyukozturk, 2006). Only the factor loads, 0.30 or above, were taken into consideration after EFA results. When the results of the analysis were evaluated, the factor structure obtained by Newton et al. (2007) for the scale was confirmed. In addition, the factor structure explored 30.044% of the scale. The factor loadings of the scale measures ranged from 0.447 to 0.616.

The higher the variance ratio calculated from the analysis, the stronger the factor structure of the scale. However, in the analyses of social sciences, variance ratios ranging from 40% to 60% are considered sufficient (Scherer, Wiebe, Luther, & Adams, 1988; Tavsancil, 2010).

Buyukozturk (2006) states that it is difficult to keep the explored variance ratio high in the behavioral sciences, and that the variance explored in the single factor scales can be enough if it is 30% or more and finally that the variance is expected to be greater in the multifactorial scales (Buyukozturk, 2006).

Table 1. Principal components factor analysis' results of caring climate scale for all participants

Dimension	Measures	Factor Loadings	Eigenvalue	Variance Explored	Cumulative Explored
Factor1	1. Athletes are treated with respect.	.561	3.906	30.044	30.044
	2. Coaches respect athletes.	.485			
	3. Coaches are kind to athletes.	.616			
	4. Coaches care about athletes.	.447			
	5. Athletes feel that they are treated fairly.	.532			
	6. Coaches try to help athletes.	.604			
	7. Coaches want to get to know all the athletes.	.511			
	8. Coaches listen to athletes.	.552			
	9. Teammates like athletes for who they are.	.528			
	10. Coaches accept athletes for who they are.	.594			
	11. Athletes feel comfortable.	.546			
	12. Athletes feel safe.	.589			
	13. Athletes feel welcome every day.	.535			

3.2 Confirmatory Factor Analysis (CFA)

CFA is performed to set forth the confirmatory construct validity of the scale. CFA is a process for creating implicit variables based on the variables observed through a model that has already been created (Schumarker ve Lomax, 1996).

Table 2. The cut-off points for fit indices in structural equation model (Buyukozturk, Sekercioglu & Cokluk, 2010)

Fit Indices	Criteria	Cut-off Points
χ^2	p>0.05	
χ^2/sd		
		≤2= Perfect Fit
		≤2.5= Perfect Fit (at small samples)
		≤3= Perfect Fit (at extensive samples)
		≤5= average fit level
GFI		≥0.90=Perfect Fit
AGFI		
CFI		
NNFI(TLI)		
RMSEA		≤0.080=Acceptable Fit
		≤0.050=Perfect Fit

In this study, 13 items representing the one-dimension were used for CFA. LISREL 8.80 computer program was used for CFA. Since the "Relative Multivariate Kurtosis" value exceeded 1 in CFA process, it is considered appropriate to perform CFA in accordance with the Robust ML method. The diagram obtained is given in Figure 1.

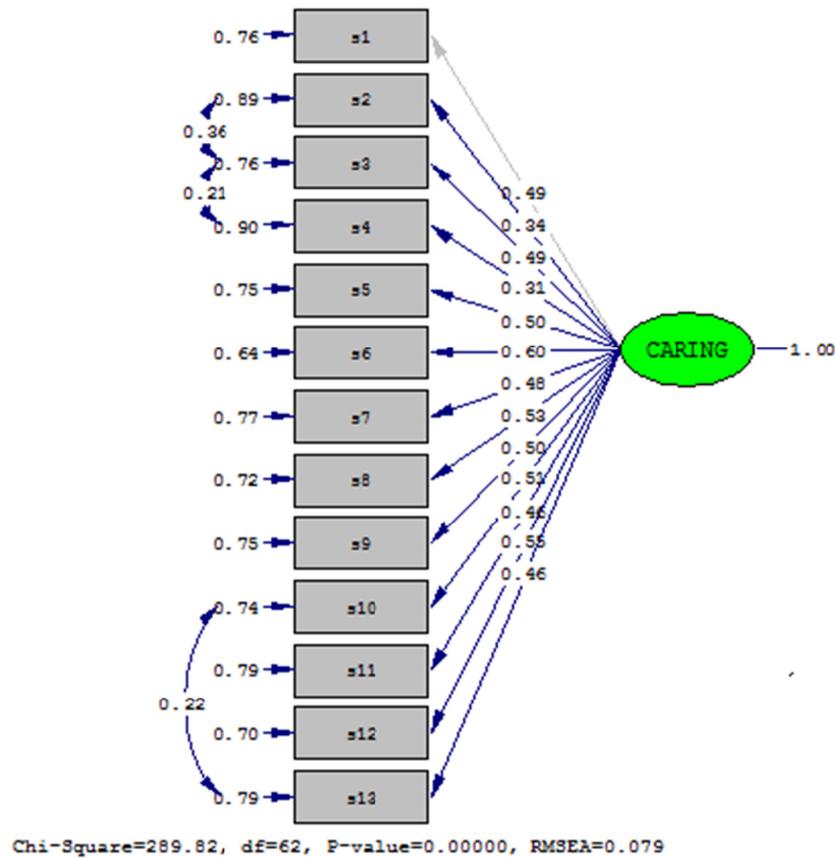


Figure 1. Represents the CFA analysis of caring climate scale in a physical activity setting

When the suggestions of modification were examined, the three modifications that had significant contribution on χ^2 were observed as the relationships between the errors of following measures 2 and 3; 3 and 4; 10 and 13. When the measures were examined, it was observed that there was a semantic affinity and these modifications were re-analyzed after addition to the model. Criteria for the final model were determined again. When all measures are processed, it was seen that all items have a value over 0.30 as factor load value. Similarly, the error variance values of all items were found to be below 0.90. These two parameters are evidence that they are good representatives for scale dimensions.

Table 3. Model data fit values in relation to caring climate scale (standardized solution)

	χ^2 (sd)	RMSEA	GFI	AGFI	CFI	NNFI	λ	ϵ
1 st level Single-Factor	289.82	0.079	0.90	0.85	0.93	0.91	0.31-0.60	0.64-0.90
Robust ML	(62)							

In the above table, CFA analysis results of the first level single-factor Caring Climate Scale were given by Robust ML estimation method. The model data fit indices for the fit between the established model and the expected model are presented in the table above. The chi-square statistic was analyzed as the first model data fit indices. The chi-square value was calculated to be quite big. As the chi-square was a fit index affected by the sample size, it was greater than 3 when it was very close to the critical value 3 when it was divided by the degree of freedom. χ^2/sd statement's being greater than 3 ($\chi^2/sd=289.82/62=4.67$) means that there is a significant difference between the established model and the existing model.

RMSEA value offers a robust statistic among the model data fit indices. Acceptable RMSEA value (RMSEA=0.080) is at the level of acceptable when compared with the expressed criteria in Table 2. This finding shows that the model established for the sample in the research provides the model data fit.

When the GFI, AGFI, CFI and NNFI values are compared with the ones in Table 2, AGFI value is very close to the desired value but slightly lower. The other model fit indices are observed to be in perfect fit.

In order to be an indication of a latent variable, the factor load value should be at least 0.30 and the error variance should be at least 0.90 (Cokluk, Sekercioglu & Buyukozturk, 2010). This rule is valid for the factor load values in the standardized solution. When the factor loadings were examined, it was seen that they were between 0.31 and 0.60. This proves that all measures represent the dimensions well.

When the error variances were examined, these values were found to be between 0.64 and 0.90. An error variance of 0.90 and above indicates that the measure must be removed from the analysis. Since there is no measure with a variance of 0.90 or higher, same as the interpretation for the factor loads, the measures in the scale are good indicators of the stated dimensions.

A holistic approach should be chosen so that we can interpret model data fit and make the right decision. Thus, all model data fit indices were examined. As a result of the examination, the general opinion is that the model data fit is ensured. In this context, the construct validity was supplied by CFA.

Table 4. Cronbach's alpha coefficient for caring climate scale and athletic identity measurement scale

Reliability Statistics	Cronbach's Alpha	Number of Measures
Caring Climate Scale	.801	13
Athletic Identity Measurement Scale	.826	10

The reliability coefficient was calculated to determine that the Caring Climate Scale was measuring with little error (Caring Climate Scale=.801; Athletic Identity Measurement Scale=.826).

3.3 Test-Retest Reliability

In addition, the reliability of the scale was also investigated by the test-retest method and in order to determine the stability of the scale, the questionnaire was re-applied to the research group of 105 people at 2 weeks intervals. After controlling whether there is any missing data, the correlation between the two applications is examined. The holistic stability factor explored by Test-Retest method is determined high ($r=.74$, $p<.01$) and significant. Based on this finding, it can be interpreted that the measured structure is stable and contains few errors.

3.4 Criterion-Related Validity

In order to set forth the criterion-related validity of Caring Climate Scale, several scale validity studies similar to the athletic identity measurement scale were executed. The correlation values between the athletic identity measurement scale and the Care Climate Scale ($r=.482$, $p<0.01$) were found to be positive and significant as expected. This finding can be interpreted that the measurement tool has relations in the direction that it is expected when applied with similar scales and can be considered as evidence for criterion-related validity.

Table 5. Pearson product-moment correlation coefficients for caring climate scale in a physical activity setting and athletic identity measurement scale

Variable	Athletic Identity Measurement Scale	Caring Climate
Caring Climate	.482**	1

Note. ** $p<0.01$.

4. Discussion and Conclusion

Regardless of the type and type of sporting event environments, it is extremely important for the athlete to feel himself in a happy and peaceful environment. In particular, it seems to be important that the trainers who are directly interacting with the athletes should provide the requirements of caring climate and form an effective coordination with all other factors. The trainer is a person who satisfies his/her training purposes, has systematic education in this subject and has the necessary diplomas. In order for a person to be a trainer, s/he must have an occupational group, a professional position (including volunteering) and a capacity value. The sports trainer fulfills his leadership roles in performance development and aims in sport (Lyle, 2002). The fact that the quality of fair contribution is professional and successful depends on the healthy nature of the trainer-athlete interaction. The establishment and development of mutual trust and understanding relationships contribute positively to the

academic and sportive lives of the athletes, and help to establish and maintain the identity of the athlete student (Cetinkaya, 2010). In general, trainers have a tremendous impact on athletes' lives as they have direct contact with them. Trainers seem to guide athletes in different fields such as school, home, social and sporting development. Moreover, they have served as the family deputy for many athletes, particularly athletes raised by one parent (Stoll, 1998).

Together with this theoretical structure, this study was started with the aim of adapting the Caring Climate Scale developed by Newton et al. (2007). First of all, preliminary studies have been conducted to ensure that the measurement tool can be applied to Turkish culture by applying the translation-back translation technique to ensure the language equivalence of the scale. The linguistic equivalence degrees of scale measures which have been translated by linguistic and sports science academicians were evaluated and the measures agreed upon were included in the scale by experiencing on the students.

In order to determine the construct validity of the Caring Climate Scale in a Physical Activity Setting; the distribution type of measure-factor components was examined by exploratory factor analysis (Tabachnick & Fidell, 2007). In the analyses performed, the scale gave a high degree of conformity with the original version and the scale measures were distributed with compliance under the defined factor. In the next stage of the analysis, the confirmatory factor analysis which was different from the one performed in original version was carried out and it was aimed to examine the extent to which the scale provided compliance scores for the Turkish culture. The findings show that the model which is theoretically predicted gives a high theoretical and statistical compliance with the scale adapted to Turkish.

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